

Public Safety (PS) Sector



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Public Safety Sector



- **Bureau of Labor Statistics (BLS) estimates 2 million career public safety workers (law enforcement, fire service, emergency medical service and corrections)**

**Volunteer workers nearly equivalent in numbers
providing fire service and emergency medical service**

- **Available data for more reliable for occupational fatalities**
- **Significant gaps exist in data for all occupational injuries and illness among public safety workers**

Public Safety Sector Council External Membership

Price William County Fire & Rescue

National Institute for Justice

National Sheriffs' Association

International Association of Chiefs of Police

International Association of Fire Fighters

International Association of Fire Chiefs

National Fallen Firefighters Foundation

New York State Department of Health

NFPA Fire Protection Research Foundation

National Association of Police Organizations

American Jail Association

Fraternal Order of Police

Department of Homeland Security – S&T & FEMA/AFG

National Institute of Standards and Technology



Public Safety Sector Council

NORA Public Safety Council:

Co-Chair: Dr. Jeff Burgess, University of Arizona

Co-Chair: Bill Haskell, NIOSH / NPPTL/PSDB

Program Manager: Les Boord, NIOSH / NPPTL/OD

Coordinator: Dr. Renee Funk, NIOSH/EPRO



Objective:

Bring together public safety partners in order to facilitate research

<http://www.cdc.gov/niosh/nora/councils/pubsaf/default.html>

Recent Council Meeting:

- **February 15-16, 2011 (Tucson, AZ)**

National Public Safety Agenda for Occupational Safety and Health Research and Practice in the U.S. Public Safety Sector (April 2009)

<http://www.cdc.gov/niosh/nora/comment/agendas/pubsafsub/>

Sixteen (16) Research Goals (Fire Service, Law Enforcement, Corrections and Emergency Medical Service)

Public Safety Sector Cross-Cutting Occupational Health and Safety Issues:

- Acute/chronic diseases related to occupational exposures
- Vehicle related traumatic injuries and fatalities
- Musculoskeletal disorders (MSDs)
- Cardiovascular disease
- Infectious disease exposures
- Occupational work stressors
- Collection of surveillance data

NIOSH Research Projects Supporting the Public Safety Sector

Customized Job Stress Products for Correction Officers
Analysis of Cardiovascular Effects of Stress in Police
Fire Fighter Fatality Investigation & Prevention Program
Fire Fighter Fatality Investigation Program – Cardiovascular
A Study of Cancer among United States Firefighters
Educational Materials on Staph/MRSA for Corrections Officers
Occupational Injuries and Illness among EMS Workers
Partnering with Industry to Build Safe EMS Work Environment
Cops & Cars: Reducing LEO Death in Motor Vehicle Crashes
Analysis of Cardiovascular Effects of Stress in Police
Stored Thermal Energy in Firefighter Protective Garments
Creation of Cumulative Permeation Test End Points in TIC's
CBRN PPE Training Standard
Fire Fighter SCBA Evaluations
Respirator-To- Ensemble Interoperability Testing
Physiological Validation of the Total Heat Loss Test

NPPTL Standards Development Organization Participation Includes:



- **National Fire Protection Association**
- **National Institute of Justice (NIJ)**



- **ASTM International, E54 Committee on Homeland Security Applications**
- **ASTM International, F23 Committee on Protective Clothing and Equipment**
- **International Standard Organization (ISO)**
- **ISEA International**



Example PPT Research Projects Supporting the Public Safety Sector

Physiological and Biomechanical Effects of Fire Fighter Boot Weight and Sole Characteristics

• Objective

- Phase 1: Investigate the effects of rubber versus leather firefighter boots of various weights on physiological and biomechanical variables on men and women fire fighters performing simulated fire fighting tasks
- Phase 2: Investigate the effects of cemented versus stitched sole fire fighter boots on physiological and biomechanical variables during simulated fire fighting tasks
- Phase 3: Investigate the physiological and biomechanical effects of firefighter boot weight and sole type on tasks with tripping potential (climbing a ladder and stepping over obstacles)



• Service Sector Impact

- Fire Fighters and other Emergency Responders



Sizing Firefighters and Fire Apparatus

- **Objective**

Establish an anthropometric database for U.S. firefighters for design enhancement of automotive fire apparatus, i.e., cabins, seats, body restraints, egresses, and bunker gear

Provide data for future revision to NFPA 1901 standard on fire apparatus

- **Progress and Plans**

Completed data collection of traditional anthropometry (face & foot scans and hand dimensions) for 954 firefighters (AZ, PA, MD & TX)

3D scanning and workspace digitization for 195 firefighters selected from the 954 firefighters will start in June 2011



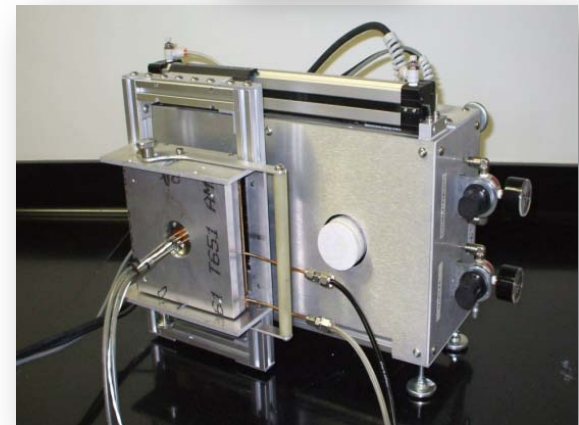
Stored Thermal Energy Capacity Evaluation of Fire Fighting Protective Clothing

- **Objective**

- Develop and validate a stored thermal energy test apparatus and method to simulate low intensity exposures for evaluating structural fire fighting ensemble propensity to prevent stored thermal energy burns

- **Public Safety Sector Impact**

- Fire Fighters



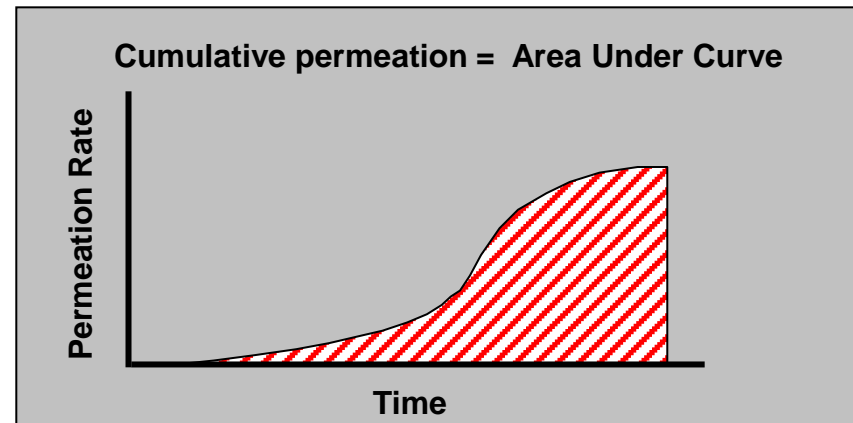
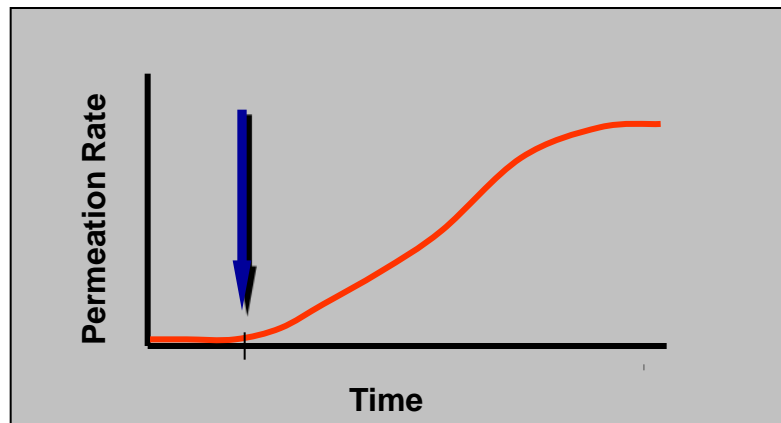
Creation of Cumulative Permeation Test End Points for Toxic Industrial Chemicals

• Objective

- Determine permeation test end points for the evaluation of protective clothing material barrier performance against toxic industrial chemicals (TICs) resulting in new dermal exposure limits
- Develop detailed cumulative permeation test procedures

• Public Safety Sector Impact

- Hazmat Responders, Fire Fighters (CBRN), Technical Rescue (CBRN), Law Enforcement, EMS Responders



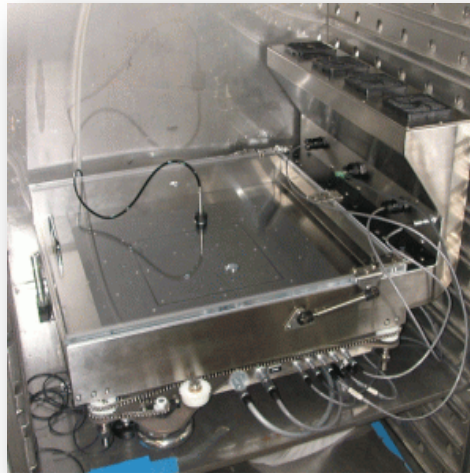
Development and Validation of Physiological Performance Models to Correlate the Efficiency of Ensemble Total Heat Loss (THL) Test

• Objective

- Understand the relationship between THL values, sweating manikin data, and human subject physiological variables obtained while wearing PPE constructed of composites across four separate THL ranges and designs

• Public Safety Sector Impact

- Hazmat Responders, Fire Fighters, Technical Rescue, Law Enforcement, EMS Responders and any other personnel that wear protective clothing



Comparison of Ensemble Total Inward Leakage Tests

• Objective

- Refine the Inward Leakage Test (SF_6), Man-In-Simulant-Test (MIST) and Particle Inward Leakage Test to ensure consistent evaluation and certification of protective ensembles and to provide tools for industry to aid in the development of new product technologies and designs

• Public Safety Sector Impact

- Hazmat Responders, Fire Fighters (CBRN), Technical Rescue (CBRN), Law Enforcement



Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) – PPE Evaluation

- **Objective**

- Support to the FFFIPP by conducting evaluations of protective clothing and self contained breathing apparatuses (SCBA) involved in Line of Duty Deaths (LODD)

- **Public Safety Sector Impact**

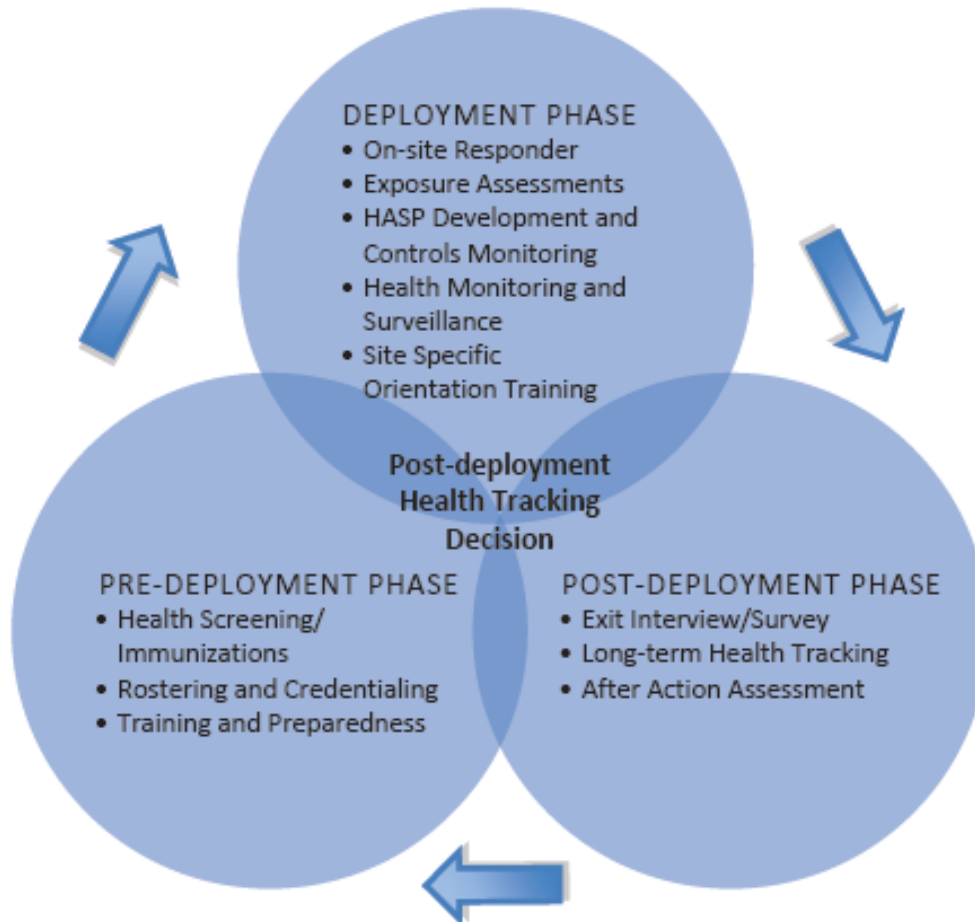
- Fire Fighters



Public Safety Posters

| # | Name | Poster Topic |
|----|---|---|
| 27 | Peterson, Jeff / NIOSH NPPTL | NIOSH Respirator Certification and Approval |
| 28 | Gavel, Kim / NIOSH NPPTL | Certified Product Investigation Procedures |
| 29 | Lee, Joo-Young / Kyushu University, Japan | Alarm and danger criteria in foot temperature to prevent the heat stroke of workers wearing personal protective clothing |
| 30 | Cloonan, Terrence / NIOSH NPPTL | CBRN Respiratory Protection Program Designs |
| 31 | Cloonan, Terrence / NIOSH NPPTL | CBRN Respirator Training Concept Standard |
| 32 | Palya, Frank Jr. / NIOSH NPPTL | Chemical, Biological, Radiological and Nuclear (CBRN) Combination Respirator Unit (CRU) Project |
| 33 | Rajagopalan, Shyamala / NanoScale Corporation | From Nanoparticles to Novel Protective Garments |
| 34 | Rehak, Tim / NIOSH NPPTL | Wildland Fire Fighting Operations Certification Standards |
| 35 | Shepherd, Angie / NIOSH NPPTL | Development of a New Test Chamber with Precise Temperature and Humidity Control for Protective Clothing Chemical Permeation Testing |
| 36 | Pouchot, Tom / NIOSH NPPTL | Firefighter Equipment Evaluation Program |
| 37 | Srinivas, Girish / TDA Research, Inc | PPE Development at TDA Research |
| 38 | Turner, Nina / NIOSH NPPTL | Firefighters' Physiological Responses to Boot Weight and Sole Flexibility during Ladder Climbing and Obstacle Crossing |
| 39 | Williams, W. Jon / NIOSH NPPTL | Field Evaluation of a New Prototype Self-Contained Breathing Apparatus |

NIOSH Emergency Preparedness and Response Office



Emergency Responder Health Monitoring and Surveillance (ERHMS)

NIOSH Docket Number: 223

<http://www.cdc.gov/niosh/docket/review/docket223/default.html>

Public Safety Breakout Sessions

PPT Stakeholder Meeting

Breakout Session 1: 9:15 – 10:45am (*Room - Yeager AB*)

FIRE SERVICE

Subject 1: Certification, Selection, Care and Maintenance of Fire Fighter PPE (Angie Shepherd)

Subject 2: Challenges Related to Turnout Gear from a User's Perspective (Jonathan Wilby)

Breakout Session 2: 3:00 – 4:30pm (*Room - Yeager AB*)

LAW ENFORCEMENT

Subject 1: NIJ CBRN Protective Ensemble Standard for Law Enforcement (Bill Haskell)

Subject 2: Hazard Assessment and Selection of PPE for Operations in Clandestine Labs (John Snawder)

Quality Partnerships Enhance Worker Safety & Health



Visit Us at: <http://www.cdc.gov/niosh/npptl/>

Disclaimer:

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Thank you